

**IN THE CLAIMS**

- 1-38. (canceled)
39. (currently amended) A preparation of an isolated ~~mammalian~~ serine racemase wherein the serine racemase comprises the amino acid sequence shown in SEQ ID NO:8.
40. (previously presented) An isolated polynucleotide that encodes the amino acid sequence shown in SEQ ID NO:8.
41. (previously presented) The isolated polynucleotide of claim 40 that comprises SEQ ID NO:1.
42. (previously presented) An expression construct comprising a polynucleotide that encodes the amino acid sequence shown in SEQ ID NO:8.
43. (previously presented) The expression construct of claim 42 wherein the polynucleotide comprises SEQ ID NO:1.
44. (previously presented) A host cell comprising an expression construct comprising a polynucleotide that encodes the amino acid sequence shown in SEQ ID NO:8.
45. (previously presented) The host cell of claim 44 which is mammalian.
46. (previously presented) The host cell of claim 44 wherein the expression construct comprises SEQ ID NO:1.
47. (currently amended) A method of producing a ~~mammalian~~ serine racemase comprising the steps of:  
culturing a host cell according to claim 44 in a culture medium; and  
recovering the a-mammalian serine racemase from the culture medium or the host cell.

48. (previously presented) The method of claim 47 wherein the host cell is mammalian.

49. (previously presented) The method of claim 47 wherein the expression construct comprises SEQ ID NO:1.

50. (currently amended) A preparation of an isolated ~~mammalian~~ serine racemase wherein the serine racemase comprises the amino acid sequence shown in SEQ ID NO:10.

51. (previously presented) An isolated polynucleotide that encodes the amino acid sequence shown in SEQ ID NO:10.

52. (currently amended) The isolated polynucleotide of claim ~~40~~ 51 that comprises SEQ ID NO:9.

53. (previously presented) An expression construct comprising a polynucleotide that encodes the amino acid sequence shown in SEQ ID NO:10.

54. (previously presented) The expression construct of claim 53 that comprises SEQ ID NO:9.

55. (previously presented) A host cell comprising an expression construct that comprises a polynucleotide that encodes the amino acid sequence shown in SEQ ID NO:10.

56. (previously presented) The host cell of claim 55 which is mammalian.

57. (previously presented) The host cell of claim 55 wherein the expression construct comprises SEQ ID NO:9.

58. (currently amended) A method of producing a serine racemase comprising the steps of:

culturing a host cell according to claim 55 in a culture medium; and  
recovering ~~the~~ a mammalian serine racemase from the culture medium or the host cell.

59. (currently amended) The method of claim 56 ~~58~~ wherein the expression construct comprises SEQ ID NO:9.

60. (previously presented) The method of claim 58 wherein the host cell is mammalian.

61. (currently amended) A method to screen compounds to identify candidate therapeutic agents comprising the steps of:

contacting a test compound with a mammalian serine racemase comprising the amino acid sequence shown in SEQ ID NO:8;  
assaying activity of the mammalian serine racemase; and  
identifying a test compound as a candidate therapeutic agent if it modulates the activity of the mammalian serine racemase.

62. (currently amended) The method of claim 61 wherein the candidate therapeutic agent inhibits the activity of the mammalian serine racemase.

63. (currently amended) The method of claim 61 wherein the candidate therapeutic agent increases the activity of the mammalian serine racemase.

64. (currently amended) A method to screen compounds to identify candidate therapeutic agents comprising the steps of:

contacting a test compound with a ~~mammalian~~ serine racemase comprising the amino acid sequence shown in SEQ ID NO:10;

assaying activity of the ~~mammalian~~ serine racemase; and

identifying a test compound as a candidate therapeutic agent if it modulates the activity of the ~~mammalian~~ serine racemase.

65. (currently amended) The method of claim 64 wherein the candidate therapeutic agent inhibits the activity of the ~~mammalian~~ serine racemase.

66. (currently amended) The method of claim 64 wherein the candidate therapeutic agent increases the activity of the ~~mammalian~~ serine racemase.

67. (currently amended) A preparation of isolated ~~mammalian~~ serine racemase having a specific activity of at least 0.075  $\mu$ mole L-serine/mg/hour, wherein the serine racemase comprises an amino acid sequence that is at least 85% 95% identical to SEQ ID NO:8 or SEQ ID NO:10 as determined according to the Smith-Waterman homology search algorithm, using an affine gap search with gap open penalty of 12 and a gap extension penalty of 1, wherein the serine racemase comprises a pyridoxal 5' phosphate binding region consisting of amino acids 47-60 of SEQ ID NO:8 or SEQ ID NO:10 and wherein differences between the amino acid sequence of the serine racemase and SEQ ID NO:8 or SEQ ID NO:10 lie in conservative amino acid substitutions which do not abolish serine racemase activity.

68. (previously presented) The preparation of claim 67 wherein the specific activity is at least 1  $\mu$ mole L-serine/mg/hour.

69. (previously presented) The preparation of claim 67 wherein the specific activity is at least 2.5  $\mu$ mole L-serine/mg/hour.

70. (previously presented) The preparation of claim 68 wherein the specific activity is at least 5  $\mu$ mole L-serine/mg/hour.

71. (canceled)

72. (canceled)

73. (previously presented) The preparation of claim 67 wherein the amino acid sequence is at least 96% identical.

74. (previously presented) The preparation of claim 67 wherein the amino acid sequence is at least 97% identical.

75. (previously presented) The preparation of claim 67 wherein the amino acid sequence is at least 98% identical.

76. (previously presented) The preparation of claim 67 wherein the amino acid sequence is at least 99% identical.

77. (currently amended) A polynucleotide encoding the ~~mammalian~~ serine racemase of claim 67.

78. (previously presented) An expression construct comprising the polynucleotide of claim 77.

79. (previously presented) A host cell comprising the expression construct of claim 78.

80. (previously presented) The host cell of claim 79 which is mammalian.

81. (currently amended) A method of producing a ~~mammalian~~ serine racemase comprising the steps of:

culturing a host cell according to claim 79 in a culture medium; and  
recovering ~~the a-~~ ~~mammalian~~ serine racemase from the culture medium or the host cell.

82. (previously presented) The method of claim 81 wherein the host cell is mammalian.

83. (currently amended) A method to screen compounds to identify candidate therapeutic agents comprising the steps of:

contacting a test compound with the ~~mammalian~~ serine racemase of claim 67;  
assaying activity of the ~~mammalian~~ serine racemase; and  
identifying a test compound as a candidate therapeutic agent if it modulates the activity of the ~~mammalian~~ serine racemase.

84. (currently amended) The method of claim 83 wherein the candidate therapeutic agent inhibits the activity of the ~~mammalian~~ serine racemase.

85. (currently amended) The method of claim 83 wherein the candidate therapeutic agent increases the activity of the ~~mammalian~~ serine racemase.

86. (currently amended) An isolated polynucleotide that is at least ~~85%~~ 95% identical to the nucleotide sequence shown in SEQ ID NO:1 or SEQ ID NO:9 as determined according to the Smith-Waterman homology search algorithm, using an affine gap search with gap open penalty of 12 and a gap extension penalty of 1, wherein the polynucleotide encodes a ~~mammalian~~ serine racemase having a specific activity of at least ~~0.075~~ 0.003 μmole L-serine/mg/hour, wherein the serine racemase comprises a pyridoxal 5' phosphate binding region consisting of amino acids 47-

60 of SEQ ID NO:8 or SEQ ID NO:10 and wherein differences between the amino acid sequence of the serine racemase and SEQ ID NO:8 or SEQ ID NO:10 lie in conservative amino acid substitutions which do not abolish serine racemase activity.

87. (canceled)

88. (canceled)

89. (previously presented) The polynucleotide of claim 86 that is at least 96% identical.

90. (previously presented) The polynucleotide of claim 86 that is at least 97% identical.

91. (previously presented) The polynucleotide of claim 86 that is at least 98% identical.

92. (previously presented) The polynucleotide of claim 86 that is at least 99% identical.

93. (previously presented) An expression construct comprising the polynucleotide of claim 86.

94. (previously presented) A host cell comprising the expression construct of claim 93.

95. (previously presented) The host cell of claim 94 that is mammalian.

96. (currently amended) A method of producing a ~~mammalian~~ serine racemase comprising the steps of:

culturing a host cell according to claim 94 in a culture medium; and

recovering ~~the a-~~ mammalian serine racemase from the culture medium or the host cell.

97. (previously presented) The method of claim 96 wherein the host cell is mammalian.